

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Withdrawn)An electro-optic modulation device that includes electro-optic crystal (1) having a birefringence index changed by a coupled electric field, and one pair of electrodes (5a, 5b) disposed so as to have the electro-optic crystal interposed therebetween to couple the electric field to the electro-optic crystal, and that changes polarization of light incident between the one pair of electrodes according to a change of the birefringence index depending upon a strength of electric field coupled via the one pair of electrodes, wherein the electro-optic crystal (1) comprises grooves (3a, 3b) parallel to a direction of the incident light respectively on one pair of side faces parallel to the direction, and consequently a thin crystal portion sandwiched between the grooves serves as a portion for coupling the electric field, and the one pair of electrodes (5a, 5b) are formed so as to fill the grooves (3a, 3b), respectively.
2. (Withdrawn)The electro-optic modulation device according to claim 1, wherein the grooves (3a, 3b) are formed on the one pair of side faces so as to range from one to the other of end faces (1c, 1d) through which light is incident or emitted.
3. (Withdrawn)The electro-optic modulation device according to claim 1, wherein the grooves are formed in only a central portion except end portions between the end faces through which light is incident or emitted, in the one pair of side faces.
4. (Withdrawn)An electro-optic modulation device that includes electro-optic crystal (1) having a birefringence index changed by a coupled electric field, and one pair of electrodes (7a, 7b; 7aa, 7bb) disposed so as to have the electro-optic crystal interposed therebetween to couple the electric field to the electro-optic crystal, and that changes

polarization of light incident between the one pair of electrodes according to a change of the birefringence index depending upon a strength of electric field coupled via the one pair of electrodes, wherein

the electro-optic crystal (1) comprises grooves (3a, 3b; 4a, 4b) parallel to a direction of the incident light respectively on one pair of side faces parallel to the direction, and consequently a thin crystal portion sandwiched between the grooves serves as a portion for coupling the electric field,

the one pair of electrodes (7a, 7b; 7aa, 7bb) are formed in bottom portions of the grooves (3a, 3b; 4a, 4b) so as to have a predetermined thickness, and

at least remaining portions of the grooves (3a, 3b; 4a, 4b) except the one pair of electrode portions are filled with insulators (9a, 9b; 9aa, 9ba; 10; 10a, 10b).

5. (Withdrawn)The electro-optic modulation device according to claim 4, wherein the grooves (3a, 3b) are formed on the one pair of side faces so as to range from one to the other of end faces (1c, 1d) through which light is incident or emitted.

6. (Withdrawn)The electro-optic modulation device according to claim 4, wherein the grooves (4a, 4b) are formed in only a central portion except end portions between the end faces (1c, 1d) through which light is incident or emitted, in the one pair of side faces.

7. (Withdrawn) The electro-optic modulation device according to claim 4, wherein remaining portions of the grooves (3a, 3b; 4a, 4b) except the one pair of electrode portions (7a, 7b; 7aa, 7bb) are filled with insulators (10), and

a whole of portions except the end faces through which light is incident or emitted is covered by further insulators (10).

8. (Withdrawn) The electro-optic modulation device according to claim 4, wherein the insulators (9a, 9b; 9aa, 9ba; 10; 10a, 10b) are wax.

9. -11. (Canceled)

12. (Previously Presented) An electro-optic modulation device that includes an electro-optic crystal having a birefringence index changed by a coupled electric field, and one pair of electrodes disposed so as to have the electro-optic crystal interposed therebetween to couple the electric field to the electro-optic crystal, and that changes polarization of light incident between the one pair of electrodes according to a change of the birefringence index depending upon a strength of electric field coupled via the one pair of electrodes, the electro-optic modulation device comprising:

- a base portion having a top surface;

- a ridge portion projecting from the top surface and extending in a direction of the incident light, at least a part of the ridge portion comprising the electro-optic crystal, the ridge portion having a width equivalent to a predetermined value or less; and

- an insulator which covers the whole device,

wherein the electrodes are formed on one pair of side faces opposed in a width direction of the ridge portion and on the whole top surface adjacent to the side faces.

13. (Currently Amended) An electro-optic modulation device that includes an electro-optic crystal having a birefringence index changed by a coupled electric field, and one pair of electrodes disposed so as to have the electro-optic crystal interposed therebetween to couple the electric field to the electro-optic crystal, and that changes polarization of light incident between the one pair of electrodes according to a change of the birefringence index depending upon a strength of electric field coupled via the one pair of electrodes, the electro-optic modulation device comprising:

- a base portion having a top surface; and

- a ridge portion projecting from the top surface and extending in a direction of the incident light, at least a part of the ridge portion comprising the electro-optic crystal, the ridge portion having a width equivalent to a predetermined value or less,

wherein the electrodes are formed on one pair of side faces opposed in a width direction of the ridge portion and on the whole top surface adjacent to the side faces, and an insulator covers the ridge portion and at least parts of the electrodes, formed on the top surface ~~one pair of the side faces~~.

14. (Previously Presented) An electro-optic modulation device that includes an electro-optic crystal having a birefringence index changed by a coupled electric field, and one pair of electrodes disposed so as to have the electro-optic crystal interposed therebetween to couple the electric field to the electro-optic crystal, and that changes polarization of light incident between the one pair of electrodes according to a change of the birefringence index depending upon a strength of electric field coupled via the one pair of electrodes, the electro-optic modulation device comprising:

a base portion having a top surface; and

a ridge portion projecting from the top surface and extending in a direction of the incident light, at least a part of the ridge portion comprising the electro-optic crystal, the ridge portion having a width equivalent to a predetermined value or less,

wherein the electrodes are formed on one pair of side faces opposed in a width direction of the ridge portion and on the whole top surface adjacent to the side faces, and an insulator covers a top surface of the ridge portion and side faces of the one pair of electrodes which are continuous with the top surface of the ridge portion.

15. (Previously Presented) The electro-optic modulation device according to claim 12, wherein the insulator comprises wax.

16. - 25. (Canceled)

26. (Withdrawn) An electro-optic modulation device that includes electro-optic crystal (31) having a birefringence index changed by a coupled electric field, and one pair of electrodes (33, 35) disposed so as to have the electro-optic crystal interposed therebetween to

couple the electric field to the electro-optic crystal, and that changes polarization of light incident between the one pair of electrodes according to a change of the birefringence index depending upon a strength of electric field coupled via the one pair of electrodes, the electro-optic modulation device further comprising:

an insulator (37) applied so as to relatively fix the electro-optic crystal (31) and the one pair of electrodes (33, 35), except end faces through which light is incident or emitted.

27. (Withdrawn) The electro-optic modulation device according to claim 26, wherein the insulator (37) comprises a matter that has viscosity and a property of becoming hard with the lapse of time.